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Amendments to the Figures

Figures 1-3 have been amended by adding the label "(RELATED ART)" below each Figure, as required by the Examiner. Replacement Sheets (as required by 37 C.F.R. 1.121(d)) are attached to this Amendment.

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Support for the Amendments

Support for the present amendments can be found throughout the specification, claims and drawings as originally filed. For example, and without being limited to such exemplary passages and/or other disclosures, support for the amendments to Claims 1, 5, 7, 9 and 11 can be found in Claims 1, 5, 7, 9 and 11 as originally filed, in the specification on page 5, lines 144-145, page 6, lines 168-177 and 180-182, page 8, lines 225-236, and page 8, line 243 through page 9, line 256, and in the drawings in FIGS. 4 and 6. In particular, support for "scrambled data" can be found in the specification at p. 7, lines 190-194 and p. 10, lines 281-283, where it is generally disclosed that the de-scrambler and EDC check (e.g., 116 in FIG. 4 and 804 in FIG. 8) read the data stored in the data buffer to de-scramble the main data and check whether errors are corrected. Logically, the data stored in the data buffer can be de-scrambled only if it is scrambled. Support for the amendments to Claim 2 can be found in the specification on page 7, line 213 through page 8, line 220, and in the drawings in FIG. 5. Support for the amendments to Claim 3 can be found in Claim 3 as originally filed and in the support for Claims 1-2 above. Support for the amendments to Claim 4 can be found in Claim 1 as originally filed. Support for the amendments to Claim 6 can be found in Claims 5-6 as originally filed. Support for the amendments to Claim 8 can be found in the support for Claims 1, 5, 7 and 11 above, in the specification on page 8, lines 234-236 and page 8, 247 through page 9, line 254, and in the drawings in FIG. 7. Support for the amendments to Claim 10 can be found in Claim 7 as originally filed. Support for the amendments to Claim 12 can be found in Claim 11 as originally filed. Support for the amendments to Claims 13-20 can be found in Claims 13-20 as originally filed. Support for new Claim 21 can be found in the specification on page 6, lines 168-177, and in the drawings in FIG. 4. Support for new Claims 22-23 can be found in Claim 1 as originally filed. Support for new Claims 24-25 can be found in Claim 5 as originally filed. Support for new Claim 26 can be found in the specification on page 6, lines 170-171. Support for new Claims 27-29 can be found in Claim 7 as originally filed. Support for new Claim 30 can be found in Claim 9 as originally filed. Support for new Claims 31-32 can be found in Claim 11 as originally filed. Support for new Claim 33 can be found in Claim 11 as originally filed, in the

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support for Claim 26, and in the specification on page 8, lines 222-228. Thus, no new matter is introduced by the present Amendment.

Remarks

Applicant and his representatives wish to thank Examiner Abraham for the thorough examination of the present application, the detailed explanations in the Office Action dated November 3, 2004, and the indication that Claims 13-20 are allowed. Claims 1, 5, 7 and 11 have been amended to focus the claims on the inventive contributions described in the application, primarily to recite that the data buffer stores scrambled data, and the ECC decoder decodes the scrambled data stored in the data buffer, using the PI and PO direction syndromes. Claims 2-4, 8-10 and 12 have been amended for consistency with Claims 1, 5, 7 and 11. Claims 13-20 have been amended to correct typographical, grammatical and formatting oversights. New Claims 21-34 have been added in the above Amendment. Thus, Claims 1-35 are active in the present application.

The present invention relates to systems and methods for decoding data. In one embodiment, the system (as set forth in amended Claim 1 above) generally comprises:

- (1) a syndrome generator for generating a PI (Parity of Inner-code) direction syndrome and a PO (Parity of Outer-code) direction syndrome from an ECC block comprising scrambled data, a PI, and a PO;
- (2) a memory that stores the PO direction syndrome during generation of the PO direction syndrome;
- (3) a data buffer for storing (i) scrambled data from the ECC block, (ii) the PI direction syndrome and (iii) the PO direction syndrome; and
- (4) an ECC decoder for performing error correction decoding of the scrambled data stored in the data buffer, using the PI direction syndrome and the PO direction syndrome.

The system embodiment of Claim 7 differs from Claim 1 in that:

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- the syndrome generator generates a PI direction syndrome (but not necessarily a PO direction syndrome);
- the memory that stores a PO direction syndrome during generation of the PO direction syndrome is not required;
- the data buffer stores scrambled data, the PI direction syndrome and a PO; and
- the ECC decoder decodes the scrambled data, the PI direction syndrome and the PO.

In another embodiment, the method for decoding data (as recited in amended Claim 5 above) comprises:

- (a) demodulating the data to generate an ECC (Error Correction Code) block that comprises scrambled data, a PI (Parity of Inner-code), and a PO (Parity of Outer-code);
- (b) writing the scrambled data into a data buffer;
- (c) calculating a PI direction syndrome from the PI and a PO direction syndrome from the PO, and storing PO direction syndrome data in a memory during calculating the PO direction syndrome;
- (d) writing the PI direction syndrome and the PO direction syndrome into the data buffer;
- (e) reading the PI and PO direction syndromes from the data buffer to an ECC decoder to perform error correction decoding of the PI and PO directions; and
- (f) when errors are found, correcting the PI direction syndrome and the PO direction syndrome, and writing corrected scrambled data into the data buffer.

The method embodiment of Claim 11 differs from Claim 5 in that:

- a PI direction syndrome is calculated (but not necessarily a PO direction syndrome);
- the PO is written into the data buffer;

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- the scrambled data and the PO is read from the data buffer to an ECC decoder to calculate a PO direction syndrome and to error correction decode the PO direction; and
- the PI direction syndrome (but not necessarily the PO direction syndrome) is read from the data buffer to the ECC decoder to error correction decode the PI direction.

Thus, the present invention includes a data buffer for storing scrambled data and at least a PI direction syndrome (generated from an ECC block), and an ECC decoder for error correction decoding the scrambled data (stored in the data buffer). The technology in Applicant's "Description of the Related Art" fails to generate either a PI direction syndrome or a PO direction syndrome from an ECC block prior to storing the ECC block in a data buffer, and therefore, fails to store at least a PI direction syndrome in the data buffer. The reference cited against the originally-filed claims (Iwasa, U.S. Pat. No. 6,470,473 [hereinafter "Iwasa"]) generally discloses a decoding process and system that error correction decodes and de-scrambles data before transferring it to a buffer of sufficient size to store the data. As a result, Iwasa fails to disclose or suggest a scheme including (1) a data buffer that stores scrambled data and at least a PI direction syndrome and (2) an ECC decoder for error correction decoding the scrambled data. Consequently, the present claims are patentable over the cited references.

The Rejection of Claims 1-12 under 35 U.S.C. § 103(a)

The rejection of Claims 1-12 under 35 U.S.C. § 103 as being unpatentable over Applicant's "Description of the Related Art" in view of Iwasa is respectfully traversed.

First and foremost, Applicant has not, at any time, admitted that the section of the present application entitled "Description of the Related Art" (Applicant's "Description of the Related Art") is actually prior art that is available against the present claims under any section of 35 U.S.C. § 102 et seq. Applicant's undersigned representative strongly objects to any characterization of Applicant's "Description of the Related Art" as an admission that such

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disclosure by Applicant constitutes prior art. Such use of Applicant's disclosure against him in prosecution discourages full and complete disclosure of all relevant information to the U.S. Patent and Trademark Office (USPTO), thus appearing to violate the USPTO's regulations and long-standing policy encouraging such disclosure (see, e.g., 37 C.F.R. §§ 1.56, 1.98 and 1.99, M.P.E.P. §§ 609 and 706.02(c), and particularly M.P.E.P. § 2129, which appears to require a statement "identifying the work of another as 'prior art'" in order to constitute an admission that the work is available as prior art against the claims¹). In the present application, there is no such statement in Applicant's "Description of the Related Art," and there has been no such admission during prosecution.²

If such information is actually prior art available against the pending claims, then a reference or other publication available under 35 U.S.C. § 102 and disclosing the same should be located and properly cited. Alternatively, the Examiner can rely on a self-executed Declaration attesting to his personal knowledge of facts establishing such technology as prior art available under 35 U.S.C. § 102 against the claims. Instead of rejecting the claims on a proper basis formed from facts established through available prior art, Applicant's disclosure has been used against him in a manner defeating a primary purpose of the U.S. patent system (full and complete disclosure of the invention) and effectively punishing Applicant for complying with his duty to disclose all relevant and/or material information known to those associated therewith.³ However, this section of the present application describes technology considered to be conventional. As such, the technology described in Applicant's "Description of the Related Art" is not intended to be claimed in the present application.

¹ Mere inclusion in the background section of an application does not appear to be sufficient. Applicant's undersigned representative is not aware of any statutory, regulatory or policy basis for presuming or concluding that any disclosure in the background section of an application is an admission that such disclosure constitutes prior art available against the claims.

² Applicant's undersigned representative notes the use of the phrase "(A)pplicant's admitted prior art" on pages 11-12 of the Amendment After Final filed July 12, 2004 and on pages 12-13 of the Amendment filed February 23, 2004. Previous uses of this phrase by Applicant's former representatives appear to merely repeat the Examiner's use, and do not constitute an admission that any part of Applicant's "Description of the Related Art" is actually prior art or the work of another.

³ See, e.g., the Patent Act of 1790, ch. 7, §§ 2 and 6, 1 Stat. 109 (in part, making it a defense to a suit for infringement that the specification "does not contain the whole of the truth concerning (the) invention"); see also *Chisum on Patents*, §§ 11.03[4] and 19.03.

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That being said, assuming for the sake of argument that the technology disclosed in Applicant's "Description of the Related Art" is available as prior art against the present claims, neither FIG. 1 nor Applicant's description thereof discloses a syndrome generator for generating at least a PI direction syndrome from an ECC block as recited in Claims 1 and 7 (or the step of generating a PI direction syndrome as recited in Claims 5 and 11). Therefore, neither FIG. 1 nor Applicant's description thereof discloses a data buffer for storing at least a PI direction syndrome along with scrambled data from an ECC block as recited in Claims 1 and 7 (or the step[s] of writing scrambled data and a PI direction syndrome into such a data buffer as recited in Claims 5 and 11). Thus, assuming for the sake of argument that the technology disclosed in Applicant's "Description of the Related Art" is available as prior art against the present claims, Applicant's "Description of the Related Art" and Applicant's FIG. 1 are saliently deficient with respect to the presently claimed invention.

Iwasa fails to cure the salient deficiencies of Applicant's "Description of the Related Art." Iwasa discloses a DVD-ROM data decoding processing system, including a DVD-ROM reproducing unit 32 and a buffer memory 34 (Abstract, ll. 1-2 and FIG. 3). The DVD-ROM reproducing unit 32 includes a demodulating part 36, a PI syndrome generating part 38, an error correcting part 40, a buffer memory 42 having a memory capacity corresponding to a few lines, a PO syndrome generating part 44, a descrambling/EDC calculating part 46, a PI syndrome storing memory 48, a PO syndrome storing memory 50, an EDC calculation result storing memory 52, an error correcting part 54, and a CPU 56 (Abstract, ll. 3-10 and FIG. 3). The error correcting part 40 derives the position and the magnitude of errors in the PI series from the PI syndromes generated in the PI syndrome generating part 38, and corrects the data errors in the buffer memory 42 on the basis of the position and the magnitude of errors in the PI series, interleaved by interleaving (Abstract, ll. 10-15). The error correcting part 54 reads out the PO syndromes of one block from the PO syndrome storing memory 50, to derive the position and the magnitude of errors in the PO series, and to correct the data errors in the buffer memory 34 on the basis of the position and the magnitude of errors in the PO series thus derived (Abstract, ll. 16-21).

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Although Iwasa discloses three different memories, Iwasa does not disclose a buffer memory for storing scrambled data from an ECC block and at least a PI direction syndrome. For example, the buffer memory 42 of Iwasa has a memory capacity corresponding to only a few lines (col. 4, ll. 16-17). Thus, buffer memory 42 stores only a few lines of demodulated data (col. 4, ll. 16-17), as opposed to scrambled data from an ECC block and at least a PI direction syndrome, as recited in the present Claims 1 and 7. Furthermore, PI syndrome storing memory 48 of Iwasa receives either PI syndromes generated in the PI syndrome generating part 38 or, if data error(s) in the buffer memory 42 have been corrected, a syndrome of "0" (col. 4, l. 61-col. 5, l. 2). Thus, PI syndrome storing memory 48 clearly stores at most only the PI syndrome, and no scrambled data (see col. 4, l. 66-col. 5, l. 8 and FIG. 6). By contrast, the present Claims 1 and 7 recite a data buffer for storing scrambled data from an ECC block and at least a PI direction syndrome.

Finally, the buffer memory 34 of Iwasa (which is the only buffer disclosed by Iwasa that can store a block of data) receives and develops descrambled data from the descrambling/EDC calculating part 46 (col. 5, ll. 12-17 and FIG. 3). Thus, buffer memory 34 of Iwasa not only does not store scrambled data, but it also appears not to store a PI syndrome, PO syndrome, or PO (see, e.g., col. 5, l. 45-col. 6, l. 9, and col. 6, ll. 42-59). As a result, none of the three buffers/memories disclosed by Iwasa stores scrambled data from an ECC block and at least a PI direction syndrome, as recited in the present Claims 1 and 7. Furthermore, Iwasa is silent with regard to writing scrambled data and at least a PI direction syndrome into such a data buffer (see amended Claims 5 and 11).

Consequently, no possible combination of Applicant's "Description of the Related Art" and Iwasa discloses or suggests (i) a data buffer for storing scrambled data from an ECC block and at least a PI direction syndrome and/or (ii) an ECC decoder for performing error correction decoding of the scrambled data stored in the data buffer, as recited in amended Claims 1 and 7, or the step of writing scrambled data and at least a PI direction syndrome into such a data buffer, as recited in amended Claims 5 and 11. Thus, amended Claims 1, 5, 7 and 11 are all fully patentable over Applicant's "Description of the Related Art" in view of Iwasa.

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Consequently, this ground of rejection is unsustainable, and should be withdrawn.

The Objection to the Drawings

The objection to the drawings has been overcome by appropriate amendment.

Conclusions

In view of the above amendments and remarks, all bases for objection and rejection are believed to be overcome, and the application is believed to be in condition for allowance. Early notice to that effect is earnestly requested.

If it is deemed helpful or beneficial to the efficient prosecution of the present application, the Examiner is invited to contact Applicant's undersigned representative by telephone.

Respectfully submitted,



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